REMARKS

The present invention relates to a catalyst which selectively oxidizes traces of carbon monoxide, concretely about 1 vol.% concentration of carbon monoxide, which typically remains in reformed gas, as referred to page 4, line 23 - 25 of the specification.

The porous carrier which is employed in the present invention practically contains ultrapure α-alumina, that is, at a purity greater than 99.95 %, as referred to in claim 1, at page 5, lines 5 - 7 of the specification, and in Examples 1 and 2 of the specification.

α-alumina which contains low levels of impurities (such as Na, Si, and Fe) is very preferable. An α-alumina which contains several hundred ppm of impurities results in the reduction of catalytic activity, as noted at page 5, lines 7 - 9 of the specification.

In the Office Action of October 11, 2006, at page 2, the Examiner first noted that no copies of the foreign patent document had been received. Although that it is understood that the International Bureau is supposed to provide such documents, since they had not been provided, Applicant is submitting an Information Disclosure Statement (IDS) simultaneously herewith.

Claim 1 has been rejected under 35 U.S.C. § 102(b) or alternatively under 35 U.S.C. § 103(a) based on U.S. Patent 4,237,030 (Noguchi). Claim 1 has also been rejected under §102(b)

based on U.S. Patent 4,119,567 (Bartsch). Furthermore, claim 2 has been rejected under 35 U.S.C. § 103(a) based on Noguchi or Bartsch in view of Ito. There are no other rejections.

Applicants have hereinabove amended claim 1 to further emphasize the distinction of the present invention vis-à-vis the cited prior art, and below Applicant explains in detail the differences between the present invention and the prior art.

However, noting the disclosure at page 6 line 20 - 23 the specification, the above amendment has not a slightest intention of waiving the catalyst of the invention, which is coated on the honeycomb carrier.

Contradistinction Between The Claimed Invention And References

1. Technical fields and uses

a) about the present invention:

A catalyst for oxidizing carbon monoxide in reformed gas

b) about Noguchi:

A catalyst for purifying exhaust gas in internal-combustion engine

c) about Bartsch:

A catalyst for preparing unsaturated organic ester

d) about Ito:

A catalyst for purifying exhaust gas, particularly lean burn exhaust gas, in an internal-combustion engine

Reaction atmosphere, (i.e., the environment in which the catalyst acts)

a) about the invention:

A reaction atmosphere is in reformed gas, that is, in a hydrogen enriched gas.

Typically, reformed gas includes H_2 as a principal component, CO_2, CH_4, H_2O, and CO, as noted at page 4 line 17 - 22 of the specification.

Further, in order that the catalyst of the invention acts effectively, not only reformed gas but also O_2 is required, as described at page 4 line 26 - 29 of the specification.

As is well known to those skilled in the art, reformed gas contains by far the greatest amount of H_2, much more than exhaust gas in an internal combustion engine.

b) about Noguchi:

A reaction atmosphere is the exhaust gas of an internal combustion engine.

As is well known to those skilled in the art, the exhaust gas of an internal combustion engine contains O_2, HC (i.e., hydrocarbons), CO, CO_2, NOx, SOx, a slight amount of H_2, and a slight amount of H_2O.

c) about Bartsch:

A reaction atmosphere is an environment which contains olefinic compound, O_2, and lower carboxylic acid, as indicated in claim 1 of Bartsch.

d) about Ito:

A reaction atmosphere is a lean burn exhaust gas of an internal combustion engine.

The constituent elements of Ito are as same as those of Noguchi, except for the respective amounts thereof. The lean burn exhaust gas contains a greater amount of O_2 and a less amount of HC than exhaust gas, as is well known to those skilled in the art.

Components of catalyst and the principal functions thereof

a) about the invention:

The components are Ru and/or Pt. The catalyst has the function of oxidizing CO into CO_2, while scarcely oxidizing all other components.

b) about Noguchi:

A component is Pt, and catalyst has a function of oxidizing HC and CO, as referred to Table 1 thereof.

c) about Bartsch:

Components are Pd, Pt, and the like. The catalyst has the function of accelerating the synthesis reaction into vinyl acetate, as referred to in claim 1 and dependent claims thereof.

d) about Ito:

Components are Ir and Pt. The catalyst has the function of reducing NOx by Pt, as referred to at col. 12, lines 31 - 41. The reduction function of Pt is well known to those skilled in the art.

The Catalyst Carrier

a) about the invention:

A catalyst carrier consists substantially of ultrapure α-alumina.

b) about Noguchi:

The catalyst carrier contains 80 wt. % of α-alumina and 20 wt. % of sintering promoter, as set forth in claim 1.

The sintering promoter comprises SiO_2, TiO_2, ZrO_2, and the like, as set forth in claim 3.

Note that, in the present invention, the foregoing components would only be present, if at all, as impurities, as indicated at page 5, lines 5 - 7, of the specification.

c) about Bartsch:

The catalyst carrier contains 96 wt. % or more of α-alumina, 3 wt. % or more of θ -**alumina**, and 750 ppm or less of the amount of Ca and Mg, as referred to in claim 1.

Contrarily, the present invention does not ordinary contain θ -**alumina**, as noted at page 5, line 35 to page 6 line 11 of the specification.

Furthermore, Ca and Mg as impurities are scarcely contained. Whereas Bartsch contains 750 ppm or less of Ca and Mg, the present invention contains 500 ppm or less thereof, because the present invention employs 99.95 % and above of purity of α-alumina,

d) about Ito:

In Ito, a catalyst carrier contains metal oxide, metal nitride, and the like, as referred to at col. 9 lines 33 - 38.

Meanwhile, Ito discloses at col. 9, lines 42 - 50, that the use of alkaline earth metals and a transition metal as co-catalysts leads to the improvement of performance of an exhaust gas

purification catalyst. In other words, in Ito such co-catalyst coexists with the catalyst carrier in practical use.

Transition metals include Fe. In the present invention, Fe is an impurity, and a material to be avoided in coexistence with the catalyst carrier. In this regard, the present invention is seen to be entirely distinct from Ito.

Applicant's Analysis

1) As described above, in uses, reaction atmosphere, catalyst function, and catalyst carrier, the present invention is different from Noguchi, Bartsch, and Ito. Therefore, the present invention is novel under 35 U.S.C. § 102(b).

2) Regarding the combination art of Noguchi and Ito

i) The combination of Noguchi and Ito only relates to exhaust gas purifying catalyst, which has different uses from the present invention.

As above, the present invention is applied to reformed gas, which is an instance of hydrogen enriched gas.

Contrarily, the art of Noguchi and Ito in combination is applied to exhaust gas which contains only a trace of hydrogen, but contains HC and NO_x. On above point, the present invention is quite distinct from the combined art of Noguchi and Ito.

ii) Further, in the present invention, the use of ultrapure α-alumina as catalyst carrier leads the improvement of catalyst performance by interfering the coexistence of impurities such as Si and Fe with catalyst component, that is Pt.

Contrarily, in the combined art of Noguchi and Ito, the aggressive coexistence of Si and Fe with catalyst component leads to theimprovement of catalyst performance.

In view of this, the combined art of Noguchi and Ito provides the exact opposite motive of the present invention for those in the art.

iii) Furthermore, in Ito, Pt has the function of reducing NO_x as mentioned above.

In the present invention, in contradiction to Ito, Pt has the function of oxidizing CO.

In view of this, the disclosure of an average particle diameter of Pt in Ito never provides a clue for those in the art to the approach of the present invention.

Therefore, the present invention is unobvious under 35 U.S.C. § 103(a).

3) About the combined art of Bartsch and Ito

The uses, reaction atmosphere, and catalyst function of Bartsch and Ito are distinct from each other; accordingly, no motive for the combination of these references is found.

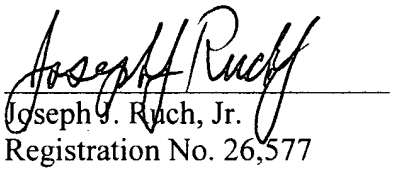
The combined art of these, which is unreasonable, is quite distinct from the present invention in the eyes of reaction atmosphere and catalyst function. Therefore, the present invention is unobvious under 35 U.S.C. § 103(a).

In view of the above, reconsideration and allowance of pending claims 1 and 2 of this application are now believed to be in order, and such actions are hereby earnestly solicited.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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